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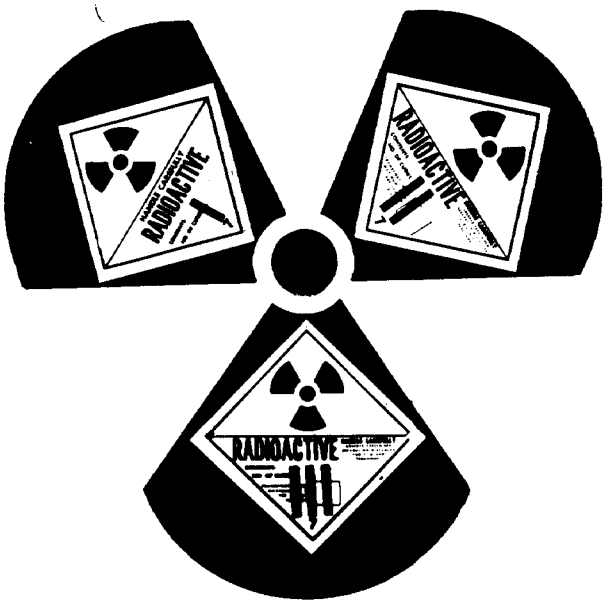

RADIOACTIVE COMMODITIES IN THE DoD SUPPLY SYSTEMS

APRIL 1985

DEPARTMENT OF DEFENSE
DEFENSE LOGISTICS AGENCY
Cameron Station, Alexandria, Virginia 22304-6100

DEFENSE LOGISTICS AGENCY,
DEPARTMENTS OF THE ARMY, THE NAVY,
AND THE AIR FORCE
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FOREWORD

This publication contains interservice policy, mandatory procedures and responsibility guidance for all activities and installations of the Military Services and the Defense Logistics Agency that are engaged in the development, training, procurement, storage, maintenance, control, shipment, and disposal of radioactive commodities. Nuclear reactors and nuclear weapons are excluded from this publication, except for components and ancillary equipment which are common to other end items of supply. This publication does not apply to users of radioactive commodities.

SIGNIFICANT CHANGES. Significant changes are throughout this publication to stratify changes for better control and processing of radioactive commodities in the DoD Supply Systems. It should be read in its entirety.

This publication will be revised periodically to reflect policy and procedural improvements and augmentations. The Chief, Depot Operations and Maintenance Division, Directorate of Supply Operations, HQ DLA (DLA-OW) is responsible for interservice coordination and revision of this publication, and will review and update as required.

BY ORDER OF THE DIRECTOR, DEFENSE LOGISTICS AGENCY, AND THE SECRETARIES OF THE ARMY, THE NAVY, AND THE AIR FORCE.

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This manual supersedes DLAM 4145.8/AR 700-64/NAVSUPINST 4000.34A/AFR 67-8/MCO P4400.105B, 18 Nov 76.

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CONTENTS

CHAPTER I
GENERAL

1-1. PURPOSE AND SCOPE. This publication contains interservice policy, outlines mandatory procedures, and identifies the responsibilities of organizational elements and key personnel worldwide which are necessary to effect radiation protection standards for the control of radioactive commodities under DoD cognizance. This publication does not apply to users of radioactive commodities; nuclear reactors and nuclear weapons, except for components and ancillary equipment which are common to other end items of supply; or unique radioactive materials used as research, test or production devices.

1-2. POLICY

a. Personnel exposure to ionizing radiation shall be kept as low as is reasonably achievable (ALARA) in accordance with DoDI 6055.8, Occupational Radiation Protection Program, and within Federal and applicable Military Service or Agency (hereinafter referred to as Service or Agency) radiation protection standards.

b. Personnel who are required to work with radioactive commodities or in radiation areas shall be instructed on potential hazards, on precautions to minimize exposure, and on operating procedures prior to being exposed to radiation.

c. Life cycle controls shall be established for each commodities containing radioactive material as early as possible in the development/design stage. Licenses and service authorizations, as applicable, shall be obtained by the responsible or Agency prior to awarding procurement contracts.

d. The use of radioactive materials in items of supply shall be kept to a minimum consistent with DoD needs. Practical, nonradioactive substitutes shall be procured and used when feasible. Radium shall not be procured or used until it has been established that a nonradioactive substitute or a less hazardous radioactive substance cannot feasibly be used.

e. The environmental consequences during each element of the life cycle shall be assessed in accordance with the National Environmental Policy Act (NEPA) and Federal and Service or Agency environmental assessment directives. This should be done at the earliest practicable stage in the planning process, including the development stage of a radioactive commodity and in all instances prior to the decision to procure the commodity.

f. This document does not waive any consumer protection or product safety requirements published or to be published by other Federal regulatory agencies.

g. Guidance contained in this document should be included in technical publications applicable to the operation, maintenance, storage, handling, transportation and disposal of radioactive material.

h. In accordance with DoDD 6050.8, Storage and Disposal of Non-DoD-Owned Hazardous or Toxic Materials on DoD Installations, the DoD is not permit the use of DoD installations for the storage of non-DoD-owned toxic or hazardous materials.

1-3. DEFINITIONS

a. Airborne Radioactive Material. Any radioactive material dispersed in the air, in the form of dusts, fumes, mists, vapors, or gases.

b. Anticontamination Clothing. Protective clothing worn by an individual to prevent contamination of the individual or personal clothing with radioactive material.

c. Controlled Area. Any area in which radioactive material or radiation producing devices are used or stored and access to which is controlled for the protection of individuals from exposure to radiation.

d. High Radiation Area. Any area that is accessible to personnel in which radiation exists at such levels that a major portion of the body could receive a dose in excess of 100 millirem in any 1 hour.

e. Ionizing Radiation. Electromagnetic or particular radiation capable of causing ionization in its passage through matter. Alpha, beta, and neutron particles, gamma and X-rays, are examples of ionizing radiation.

f. License Exempt Material Items. Items containing radioactive material not subject to Nuclear Regulatory Commission (NRC) regulations or radioactive material exempt from licensing by the NRC as specified in Title 10, Code of Federal Regulations (10 CFR).

g. Licensed Material. Radioactive material that is received, possessed, used, or transferred under a general or specific license issued by the NRC.

h. Life Cycle Controls. The composite of all management actions to assure that the credible hazards associated with possession and use of radioactive commodities are minimized. Such controls are established during each phase of the life cycle to assure that the effects of radiation on personnel and the environment are maintained within acceptable limits. Controls are established during the Research and Development phase to assure that introduction of radioactive commodities into the supply system are held to an absolute minimum consistent with mission requirement; and special capabilities, facilities, and procedures for supply, transportation, maintenance, use, training, and disposal (including demilitarization) are or will be provided.

i. Naturally Occurring and Accelerator-Produced Radioactive Materials (NARM). Radioactive material not subject to NRC controls, however, the receipt, possession, use or transfer may require specific authorization by the Service or Agency.

j. Nonoccupationally Exposed Individual. An individual whose work is not normally performed in a controlled area and whose duties do not normally involve exposure to ionizing radiation; however, an individual may have reason to enter a controlled area in the performance of duties (messengers, deliverymen, 1/ maintenance workers, etc.). The exposure to ionizing radiation shall not be in excess of that allowed to any individual in the population at large.

k. Occupationally Exposed Individual. Synonym-Radiation Worker. An individual whose work is performed in a controlled area and whose duties routinely involve exposure to ionizing radiation.

l. Radiation Area. An area in which an individual could receive a radiation dose of 5 millirem or more in any 1 hour or 100 millirem or more in any 5 consecutive days. For practical purposes, a radiation area shall be considered to be any area in which the radiation intensity is greater than 2 milliroentgen per hour (mR/hr) but less than 100 mR/hr. Specific Service or Agency guidance shall determine which standard will prevail.

m. Radiation Incident. The unplanned loss or control of radioactive material.

n. Radioactive Commodity. An item of Government property composed in whole or in part of radioactive materials and to which a National Stock Number (NSN) or part number has been

1/ For convenience in reading, in reading, standard pronoun gender usage will be followed in this manual. Where such pronouns as "he" or "his", etc., are used, it should be understood to include "she" or "hers", etc.

assigned. A radioactive commodity is any item in the DoD Supply System that contains radioactivity equal to or in excess of the quantities listed in 10 CFR, Part 20, Appendix C, or contains a specific activity greater than 0.002 microcuries per gram of radioactive material (49 CFR, Part 173.389) and is license exempt. These quantities are established so that control procedures will be published for the receipt, storage, use, maintenance, transportation and disposal.

o. Radioactive Devices. Radioactive devices are manufactured articles, such as instruments, clocks, electron tubes, apparatus or similar devices having radioactive materials (other than liquids) in a nondispersible form as a component part. For radioactive gases, the requirement for the radioactive material to be in a nondispersible form does not apply.

p. Radioactive Material. Any material or combination of materials which spontaneously emits ionizing radiation.
NOTE: Radioactive materials, as referenced above, include natural elements such as radium and accelerator-produced radionuclides and NRC-licensed material.

q. Radioactive Waste. Consists of any of the following:

(1) Property which has become contaminated to the extent that decontamination is economically unsound.

(2) Surplus radioactive material whose sale, transfer, or donation is prohibited.

(3) Radioactive material which is determined to be unwanted after having been advertised as being surplus.

(4) Waste, which is radioactive, resulting from production, possession, or use of radioactive material.

r. Radiological Safety, Radiation Protection or Radiation Safety Officer. An individual who is designated by the Commanders or Commanding Officers, or Directors of the Authorized Activity to provide consultation and advice on the degree of hazards associated with ionizing radiation and on the effectiveness of measures to control these hazards. This individual shall be qualified technically by virtue of education, training, and experience commensurate with the type and hazard of the radiation source(s) for which he will be responsible. The terms "Radiological Safety, Radiation Protection, Radiation Safety Officer" are not intended to denote commissioned status.

s. Services or Agency. Includes Army, Air Force, Navy, Marine Corps, and the Defense Logistics Agency.

t. Use of "Shall", "Will", "Should", and "May". In this publication the words "Shall" or "Will" are used in an imperative sense. "Should" is used in a recommendatory sense; "May" is used in a permissive sense. It may be necessary to use "Will" in cases where simple futurity is required, i.e., "Power for the motor will be supplied by the ship." Also, unless the context requires otherwise, words imparting the singular include the plural and vice versa.

u. Supply and Maintenance Facilities. Will include the following:

Army:	Class II Supply and Maintenance Facilities within CONUS and Overseas, and supply, procurement, maintenance and transportation activities at Class I installations.
Navy:	Any naval activity or fleet unit assigned responsibility to store, maintain or process subject material, such as Naval Supply Centers, or Depots, Naval Shipyards, etc.
Air Force:	Air Force Logistics Command, Air Logistics Centers.

Marine Corps:	Marine Corps Logistics Bases.
Defense Logistics Agency:	Defense Supply Centers and Defense Depots.

v. User. An individual or an organizational element that uses or operates a radioactive commodity item because of mission requirement.

1-4. RESPONSIBILITIES

a. Commanders of Research and Material Developing Agencies shall:

(1) Assure nonradioactive substitutes are used whenever feasible. Proposals to incorporate radioactive material into a commodity must consider the cost effectiveness and safety against the use of alternative methods to achieve project goals. The cost of decontamination, property restoration, and disposal shall be included in the cost effectiveness study. When radioactive materials are used all relevant documents describing the commodity shall indicate that the commodity is radioactive, the amount(s) of activity, and the radioisotope(s) involved.

(2) Assure sufficient testing has been performed and coordinated with health, safety and license managers to establish that the radioactive commodity is militarily useful and that proposed life cycle instructions are adequate.

(3) Develop safety criteria in design; and establish, in publications such as technical manuals and bulletins, specific safe procedures and physical standards pertaining to equipment and systems which they develop. Publications prepared shall be submitted to the NRC License and/or Service Authorization Manager for approval.

(4) Prepare maintenance allocation charts which designate allowable repair operations at each maintenance echelon, and indicating which repair echelons require a license or authorization.

(5) Prepare environmental and safety documentation to assess the safety and environmental consequences during the life cycle of the commodity. Safety documentation shall be in accordance with DoDI 5000.36, System Safety Engineering and Management, and MIL-STD-882.

b. Commanders of Training Agencies shall:

(1) Establish training courses for personnel who are responsible for following procedures as set forth in this manual.

(2) Incorporate the specific safe procedures and safe physical standards established by material developing agencies into applicable training curricula and training documents.

c. Commanders of Material and Supply Agencies shall obtain and administer required licenses or service authorizations permitting the use of radioactive commodities for which they have logistical responsibility, and shall designate the manager for each license or service authorization, except for Marine Corps, where licenses are maintained by the Deputy Chief of Staff for Installations and Logistics, HQ U.S. Marine Corps; and the Air Force, where licenses are maintained by the USAF Radioisotope Committee, HQ Air Force Medical Service Center (HQ AFMSC).

d. Commanders of Procuring Activities shall:

(1) Assure that appropriate NRC licenses or service authorizations have been obtained by the requiring Service or Agency prior to contract award.

(2) Obtain approval from the applicable NRC license or Service Authorization Manager through the Material Inventory Control Point before each procurement or reprocurement action to prevent violation of the limits and conditions of the applicable license or authorization.

(3) Assure that special procurement clauses and procurement documentation for radioactive materials are included in contracts for such commodities.

(4) Assure that procurement contracts require marking and labeling of radioactive commodities in accordance with MIL-STD-129.

(5) Assure that the data required by DoDI 6050.5, Hazardous Material Information System (HMIS), and the appropriate Service/Agency implementing regulations, are acquired and provided to the appropriate focal point cited in DoD 6050.5M, DoD HMIS Procedures.

(6) Assure that provisions of 41 CFR, Part 50-204, Safety and Health Standards for Federal Supply Contracts, are included in all applicable Commodity Contracts.

e. Commanders of Material Inventory Control Points shall:

(1) Maintain records of quantities of radioactive commodities procured, bulk storage, and disposal as well as such other records which are required to be kept by the managers of the NRC license or service authorization.

(2) Assure radioactive material procurements do not exceed use, quantity or activity limitations imposed by licenses or service authorizations and that receiving agencies are properly authorized to receive the material under the conditions of the applicable license or service authorizations.

(3) Coordinate matters pertaining to radioactive commodities with the appropriate NRC License or Service Authorization Manager.

(4) Establish and maintain appropriate data to identify applicable items as radioactive. Radioactive identification data will be incorporated with item management data and disseminated through the supply cataloging system.

(5) Assure that the same NSN will not apply to both radioactive and nonradioactive items in the Federal Supply System.

(6) Assure that the same NSN cannot apply to functionally identical or like radioactive items having different radioisotopes.

(7) Assure commodities are identified, marked and labeled in accordance with MIL-STD-129. Note: (5), (6), & (7) do not apply to low level exempt items (e.g., electron tubes).

f. Commander, Defense Logistics Services Center shall assure that the Federal Cataloging System has the capability to assign different NSNs to items that meet the criteria of subparagraphs e(5) and (6).

g. Commanders of Material Maintenance Control Points are responsible for assuring maintenance performed on radioactive commodities is consistent with conditions of applicable licenses or service authorizations.

h. Commanders of Supply and Maintenance Facilities shall:

(1) Assure safe handling, storage, and shipment of radioactive commodities.

(2) Assure safe operation of repair and maintenance facilities handling radioactive components, where applicable.

(3) Report to Material Inventory Control Points discrepancies between data published (Service Technical Bulletin for Radioactive Commodities; MIL-HDBK-600; and DoD 6050.5-L or DoD 6050.5-LR) concerning radioactive commodities, and data determined by examination at the facility. Also report the discrepancy to the activity responsible for maintenance of the published data.

(4) Assure that commodities and/or end item received for repair/maintenance are marked in accordance with MIL-STD-129 prior to return to stock or use.

(5) Assure radioactive commodity storage areas are surveyed and monitored.

(6) Assure procedures are prepared for handling credible emergencies during receipt, storage, maintenance, and shipment.

(7) Report defective radioactive commodities to the Material Inventory Control Point.

(8) Comply with Service or Agency directives for the disposal of excess, surplus and condemned radioactive commodities and of radioactive waste.

i. Managers of NRC Licenses or of Service or Agency Authorizations shall:

(1) Coordinate, obtain, administer, review, amend, and maintain necessary licenses and authorizations for radioactive commodities managed by the command to which they are assigned.

(2) Provide information and guidance to all commanders specified in subparagraphs a through h above, with respect to limitations, constraints, and special data, conditions or procedures which affect the responsibilities of those commanders for each radioactive commodity.

(3) Monitor the various elements of the life cycle program of the radioactive commodities to assure compliance with conditions of the license or authorization.

(4) Assure that licensed or authorized material is only transferred to authorized persons or organizations.

(5) Assure proper disposition of radioactive materials and decontamination of areas is completed prior to license or authorization termination.

1-5. REFERENCES

a. Title 10, Code of Federal Regulations, Energy.

b. Title 29, Code of Federal Regulations, Section 1910, Occupational Safety and Health Administration (OSHA) Safety and Health Standards.

c. Title 32, Code of Federal Regulations, National Defense.

d. Title 40, Code of Federal Regulations, Protection of the Environment.

e. Title 41, Code of Federal Regulations, Part 50-204, Safety and Health Standards for Federal Supply Contracts.

f. Title 49, Code of Federal Regulations,Transportation.

g. DoD 4160.21-M, Defense Utilization and Disposal Manual (includes previously referenced DoD 4140.34-M, Defense Utilization Manual).

h. DoDI 5000.36, System Safety Engineering and Management.

i. DoDI 5100.52, Radiological Assistance in the Event of an Accident Involving Radioactive Material.

j. DoDD 5230.16, Nuclear Accident and Incident Public Affairs Guidance.

k. DoD 6050.5M, DoD Hazardous Materials Information system Procedures.

l. DoD 6050.5-LR or DoD 6050.5-L, DoD Hazardous Materials Information System (Microfiche).

m. DoDI 6050.5, Hazardous Material Information System.

n. DoDD 6050.8, Storage and Disposal of Non-DoD-Owned Hazardous or Toxic Materials on DoD Installations.

o. DoD 6055.5-M, Occupational Health Surveillance Manual.

p. DoDI 6055.8, Occupational Radiation Protection Program.

q. DoDI 7730.12, Notification Procedures for Accidents and Significant Incidents Involving Nuclear Weapons, Reactors and Radioactive Materials.

r. MIL-STD-105, Sampling Procedures and Tables for Inspection by Attributes.

s. MIL-STD-129, Military Standard Marking for Shipment and Storage.

t. MIL-STD-882, System Safety Program Requirements.

u. AFR 71-4/DLAM 4145.3/TM 38-250/NAVSUP PUB 505/MCO P4030.19, Preparation of Hazardous Materials for Military Air Shipment.

v. AFR 127-4, Investigating and Reporting U.S. Air Force Mishaps, chapter 10.

w. AFR 160-132, Control of Radiological Hazards.

x. AFR 161-8, Control and Recording Procedures for Occupational Exposure to Ionizing Radiation.

y. AFR 161-16, Radioactive Materials Licenses and Permits.

z. AFR 161-28, Aerospace Medicine, Personnel Dosimetry Program and the USAF Master Radiation Exposure Registry.

aa. AR 385-11, Licensing and Control of Sources of Ionizing Radiation.

ab. DLAM 1000.1, DLA Safety and Health Manual.

ac. DLAR 1000.28/AR 40-14, Control and Recording Procedures for Exposure to Ionizing Radiation and Radioactive Materials.

ad. DLAR 4500.15/AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19, Reporting of Transportation Discrepancies in Shipments.

CHAPTER II

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

2-1. RESEARCH AND DEVELOPMENT PHASE

a. The decision to use radioactive material in a commodity shall be based upon the benefits derived in terms of cost effectiveness and safety against that derived from the use of alternate material. Some of the major factors which shall be weighed are the extra costs involved in procurement, quality assurance, recordkeeping, training, transportation, facility restoration, environmental consequences, disposal and auxiliary protective equipment encountered during bulk storage, maintenance, and use of radioactive material.

b. Use of radioactive materials shall be kept to the absolute minimum consistent with operational requirements. Nonradioactive substitutes shall be used whenever feasible from a cost effectiveness and operational point of view. Where substitution is not feasible, the least hazardous suitable type and form of radioisotope shall be used.

c. Use and environmental factors shall be considered in designing tests to establish and prove the military usefulness and safety of the item. Drop, shock, vibration, temperature extreme tests, altitude, and accelerated weathering tests such as those established in Title 10, CFR, section 32.101, as appropriate, should be used in the design tests. While the referenced tests are intended for luminous safety devices used in aircraft, most military equipment is subjected to similar extremes during normal use, storage, or transportation.

d. Technical letters, orders, manuals, specifications and other life cycle instructions shall be developed to assure all personnel engaged in the procurement, inspection, transportation, storage, use, maintenance, calibration, control, and disposal are aware of potential hazards, precautions to minimize exposure, operating procedures and their responsibility in the overall life cycle of the radioactive commodity.

e. Proposals, draft instructions, specifications, and needed auxiliary equipment shall be coordinated with affected DoD elements.

2-2. TEST AND EVALUATION

a. The adequacy of design and instructions shall be evaluated by an agency independent of the developer or of potential manufacturers.

b. The results of development tests, operational tests and other tests shall be summarized and forwarded to the appropriate commander of the material and supply command for incorporation into the application for the required license or service authorization.

c. Evaluations of the potential safety and health hazards of each item and system will be conducted throughout all development testing and operational testing, as established by Service or Agency directives.

2-3. SPECIFICATIONS, PURCHASE DESCRIPTIONS, AND DRAWINGS. Specifications, purchase descriptions, and drawings for radioactive commodities or components shall include:

a. Provisions of MIL-STD-129.

b. Notice to make a potential contractor aware of the possible need for an NRC or State license.

CHAPTER III

LOGISTICS PHASE OF THE LIFE CYCLE CONTROLS

3-1. CONTROL OF RADIOACTIVE MATERIAL. Control of radioactive material is necessary to minimize exposure of personnel. Since man cannot sense ionizing radiation, but must use instruments to detect and measure it, control requires procedures to ensure that those who receive, store, transport, use, and dispose of radioactive commodities recognize them as containing radioactive material and are knowledgeable of the hazards of ionizing radiation and methods of radiation protection. Control is in addition to accountability and may apply to expendable or other nonaccountable property. The degree of control to be exercised during any life cycle phase shall be appropriate for the types and quantities of commodities involved and for the kinds of operations to be conducted.

3-2. LICENSES AND SERVICE AUTHORIZATIONS

a. Pursuant to law, the NRC controls certain specified radioisotopes that are, or may be, incorporated in radioactive commodities. This control is exercised, only within the United States and its possessions, by issuance of licenses, inspections and publication of regulations. Each license contains specific restrictions and limitations. The provisions of each license shall be followed precisely, since violation risks revocation of the right of possession and use.

b. Federal activities and installations are not subject to the registration or licensing requirements of individual states, but are subject to the NRC rules and regulations as contained in Title 10, CFR. Developing, testing, manufacturing or storing radioactive materials, commodities or radiation-producing devices on DoD real estate must be with the concurrence of the Service controlling the real estate.

c. A Service or Agency authorization, if applicable, shall be obtained for those radioactive materials that are not under the control of a specific NRC license. Control is exercised in much the same manner as for an NRC license. The authorization serves the same purpose as the license, with various single, bi- or tri-Service Agency directives being used as regulations.

d. The Service or Agency having logistical responsibility for the radioactive commodity shall obtain the required license(s) or Service authorization(s) to permit the use of that commodity within the Service or Agency. DoD-wide distribution of a commodity shall be with the concurrence of all Services or Agencies concerned.

e. Documents that are required in making application for licenses or authorizations or amendments thereto shall be coordinated among all affected organizations prior to their submission for license or authorization. Such documents shall include the application, specifications, and control literature.

f. The Service or Agency shall ensure that NRC-licensed material and Service or Agency authorized material under its control are not transferred to unauthorized persons or organizations.

g. Applications for licenses or authorizations for use of radioactive materials in commodities are in addition to other prescribed procurement actions and procedures. Applications must be factual and complete to allow comprehensive review. They should not, however, include extraneous information which is not directly applicable to the item for which the application is made. Each initial application shall include:

(1) A complete description of the commodity, e.g., narrative description plus drawings, purchase description, or specifications.

(2) Procedures by which the DoD Services or Agencies shall assure that quality audits are performed to verify the manufacturer's and the accepting government inspector's testing.

(3) Detailed radiation protection procedures to protect DoD employees and the general public during the complete life of the commodity. The procedures shall include an abbreviated organizational chart of the key agencies and offices and enumeration of their responsibilities with reference to life cycle controls. Pertinent sections of implementing Service or Agency regulations, orders, instructions, manuals, and bulletins shall also be included or referenced (if available at reviewing Agency).

(4) Internal procedures for use within other DoD components authorized to use radioactive commodities. The receiving Service shall accept complete responsibility for providing the licensee with information concerning control, investigation, reports to the NRC, and enforcement. The NRC conducts all of its regulatory activities (licensing, compliance inspection, and enforcement) with the organization to which the license is issued.

(5) The total activity of each radioisotope, maximum radioisotopic content of each individual item, chemical form (as a compound); and physical state, of the radioisotope and its contaminates.

(6) Summary of significant research, development, test, and evaluation effort and results.

(7) Quality assurance procedures for surveillance and verification of quality and integrity of material throughout the item's life cycle.

(8) Control procedures applicable during the commodity life cycle. Special qualifications required of users shall be stated in the procedures. Consideration should be given to adoption of directives as bi- or tri-Service or Agency documents. Specific information should be provided for each handling activity, i.e., acceptance inspectors, surveillance inspector, supply (storage) and maintenance personnel, users, transportation and disposal personnel. The instructional material should be prepared so as to separate that required by each of the foregoing groups from each of the others. Life cycle control directives for naturally occurring or accelerator-produced radioactive commodities shall be as thorough as those that are required for commodities shall be as through as those that are required for commodities which have a specific license.

(9) Procedures for the distribution and control of the commodity among the Services or Agencies when the commodity is governed by a single license for more than one DoD element.

(10) Summary of controls for maintenance and repair.

h. Procedures for amendment or renewal of licenses are the same as those prescribed for the original license or authorization. Amendment or renewal applications shall include any provisions which are required for initial license applications but which were not submitted previously.

i. Unless the procuring Service or Agency already has developed the required procedural, safety, and environmental documents which must be submitted to obtain the required licenses and Service or Agency authorizations, the need to prepare such documents should be included in any contracts which involve research, development or supply of a radioactive commodity.

3-3. PROCUREMENT OF RADIOACTIVE MATERIALS

a. Insert DoD FAR Supplement (DFARS) 52-223-7000, in applicable contracts.

b. Current issue of DoD Item DI-H-1332( ), Radioactive Material Data, shall be included in all developmental contracts and in major end item procurements in which a contractor might incorporate radioactive materials.

c. Procurements or reprocurements shall be coordinated with the NRC License or Service Authorization Manager prior to initiation.

d. Potential contractors shall be advised of the possible need for an NRC or state license to manufacture the radioactive supply item being procured or reprocured.

e. Incorporate procurement safety and health procurement requirements into the contract.

f. Contracts involving radioactive materials are considered a hazardous items contract and the following special provisions shall apply:

(1) The Government reserves the right both before and after contract award to survey the prime contractor and any and all of the subcontractors which handle hazardous material to be certain the work areas which Government employees visit are safe. The contractor shall agree to insert such a requirement in each of his subcontracts.

(2) The contractor must possess a valid NRC or Agreement State License covering the radioactive material to be used. A copy of the NRC or Agreement State License and subsequent amendments shall be provided to the office responsible for procurement safety.

(3) A copy of the report of any inspection performed by the NRC, state, or any other Agency, during the length of the contract, must be furnished to the office responsible for procurement safety.

(4) Prior to award of any subcontract(s) involving radioactive material the contractor shall request the appropriate Contracting Officer to cause to be performed the required Pre-award Safety Survey of Plant(s) of any proposed subcontractor(s), and obtain Contracting Officer’s consent to place subcontract in writing prior to the award of any subcontractor(s).

(5) Government furnished facilities, materials and equipment contaminated with radioactive materials shall be decontaminated and restored to the condition in which received or in accordance with applicable Service or Agency regulations. The contractor should request guidance from the Contracting Officer. Responsibility and costs for restoration and disposal will be identified in the contract. Prior to final payment, the contractor shall certify in writing to the Contracting Officer that proper decontamination and disposal has been accomplished. The Government reserves the right to verify the adequacy of restoration and disposal.

(6) Report of Accident or Incident. The contractor shall provide a followup written report as required by Data Item Description No. DI-H-1329A listed on the DD Form 1423, Contract Data Requirements List, contained in Section M of the contract. Note the direction in Block 7 of DI-H-139A, Accident or Incident Report, e.g., "accidents or incidents involving production or project stoppage shall be reported under DI-H-A-1006, ’HOTLINE’ Telephone Report as well as this data item."

(7) Investigation of Accident/Incident. The Government reserves the right to investigate an accident/incident reported in accordance with DI-H-1329A.

(8) When appropriate the contractor shall prepare a contingency plan for use of Department of Energy (DOE) disposal facilities if commercial facilities become unavailable.

3-4. QUALITY ASSURANCE AND INSPECTION

a. Only personnel who have received formal training and who have demonstrated their ability to perform the required quality assurance testing will be used for the purpose of acceptance testing, verification testing, or quality audits. The criteria for assuring this is accomplished will be included in the applications for licenses and Service or Agency authorizations.

b. Quality audits will be performed to verify the supplier's and Government's acceptance inspectors testing. These audits will be conducted by random sampling of production lots and by person(s) who are independent of the contractor, any subcontractor, and the resident Government inspector. Sampling and testing shall conform to the requirements established in MIL-STD-105 and applicable Service or Agency directives.

c. Commodities can lose their integrity during storage and use, possible releasing radioactive material and creating potentially hazardous situations. Surveillance and verification of a small random sample shall be conducted on radioactive commodities in storage and use to foresee the need for replacement. Quality assurance procedures will include instructions as to what will be done if one or more samples fail. Because such items may be hazardous, Service or Agency inspectors shall be adequately trained in the radiological aspects as well as other requirements of such commodities prior to this type of work assignment.

3-5. IDENTIFICATION OF RADIOACTIVE ITEMS

a. Detailed physical characteristics concerning the radioactive properties of specific supply items can be found in the various publications of the DoD Hazardous Materials Information System. The Service or Agency technical points of contract for this system are identified in DoD 6050.5-M. The item data are published in microfiche form in DoD 6050.5-L or DoD 6050.5-LR. The system is located at the Defense General Supply Center (DGSC) in Richmond, VA.

b. Logistical item identification data can be found in the Identification Listings (ILs) by Federal Supply Group or Class published by the Defense Logistics Services Center (DLSC).

c. Commodities or items containing radioactive materials should be marked or labelled in accordance with MIL-STD-129 to show that they contain radioactive material.

CHAPTER IV

PROTECTION OF PERSONNEL HANDLING RADIOACTIVE COMMODITIES

4-1. GENERAL. Control procedures shall be developed for the protection of DoD personnel handling radioactive commodities (e.g., shipment, inspection, storage, use, maintenance and disposal operations).

a. All organizations whose personnel handle radioactive commodities shall prepare standard operating procedures in coordination with designated medical service and radiation protection personnel. These procedures shall be tailored to the operation being performed and the type of commodities handled.

b. Section 206 of the Energy Reorganization Act of 1974 and related documents must be posted in accordance with Title 10, CFR 19, 20 and 21 or applicable Service or Agency directives.

c. Preplacement, periodic, and termination medical examinations shall be required of personnel in accordance with DoD 6055.5-M and Service or Agency directives.

d. Information about a radiation incident shall be released to the public in accordance with DoD 5230.16 and Service or Agency directives.

e. Controls are included in the technical literature for commodities as to which activities can perform what types of functions and the procedures, training and equipment required to do the work safely. The industrial hygienist, radiation protection officer, or safety officer can provide specific recommendations for the type of operations involved.

4-2. RADIATION EXPOSURE STANDARDS AND POLICY

a. The whole body radiation exposure limit for occupationally exposed individuals is 5 rem per year and for nonoccupationally exposed individuals (general public), the limit is 0.5 rem per year. No individual under 18 years of age or women known to be pregnant shall be occupationally exposed to radiation in excess of that allowed to any individual in the general population. Airborne radioactive concentrations shall not exceed the limits set forth in Title 10, CFR 20.

b. Personnel exposure to ionizing radiation shall be kept ALARA in accordance with DoDI 6055.8. Responsibility for minimizing radiation exposure and controlling radioactive materials rests with commanders and supervisors. This responsibility includes orientation and indoctrination of personnel who are subject to exposure to radiation; implementation of applicable directives and standing operating procedures, and provision for personnel dosimetry, medical examinations, and anticontamination clothing and equipment when required.

c. Contamination limits will be specified by Service or Agency directives.

4-3. TYPES OF HAZARDS. There are two types of radiation hazards, external and internal.

a. External radiation hazard is from ionizing radiation reaching the body from an external source. Some external radiation occurs naturally and is called background radiation. The hazard being considered here is additional to that from background and is caused by radiation from the commodities being handled.

(1) External exposure may be reduced by limiting time of exposure; increasing the distance between personnel and the source of radiation; and increasing the amount of source shielding.

(2) Individual personnel dosimetric device and area radiation detection, indication, and computation device shall be used as needed to verify that the procedures, instructions, and protective equipment are suitable for the hazard encountered.

b. Any radioactive material that enters the body is an internal radiation hazard. Radioactive material can enter the body by being eaten, inhaled or absorbed through the skin. If precautions are not taken, this could occur while handling leaking sources, repairing broken radioactive commodities, working in contaminated areas or in airtight storage areas containing leaking gaseous sources, and during accidents. The degree of hazard depends upon the amount and type of radioactive material and in which organs it is deposited. Control and prevention of contamination are the most effective ways to reduce internal hazards. Prohibit smoking, eating, drinking in areas where radioactive materials are handled. Storage of food, beverages, eating and drinking utensils, and cosmetics in controlled areas shall be prohibited. Wash hands and face upon leaving such areas. If there is a high probability of contamination occurring, other precautions to prevent radioactive materials from entering the body through the nose, mouth or skin include:

(1) Providing monitoring instruments with which the contamination can be located and with which personnel can assure they are free of contamination.

(2) Control dust by eliminating dry sweeping and by filtered ventilation systems. If vacuum cleaners are used they should be equipped with filters capable of removing 99.97 percent of particulates 0.3 micron or larger.

(3) Work areas can be designed to limit the spread of contamination and to facilitate decontamination by using smooth work surfaces with replaceable coverings (e.g., disposable absorbent paper).

(4) Anticontamination clothing such as coveralls, gloves, caps, and shoe covers can be used to protect the skin, hair or personal clothing. Anticontamination clothing should be colored or marked for purposes of control, e.g., monitoring, decontamination, and laundering.

4-4. PERSONNEL TRAINING

a. personnel shall be trained as required by paragraph 1-2b. of this manual.

b. Each individual shall receive instructions in proper safety and health procedures to be used in the specific operations before being exposed to potential radiation hazards. Additional sources of training in radiation protection are obtained from the following sources:

(1) Department of the Army. Courses are announced in DA Pamphlet 350-10, U.S. Army Formal School Catalog. A separate circular announces training courses conducted by the Surgeon General.

(2) Department of the Air Force. Radiological safety is included in courses taught at Brooks AFB and Sheppard AFB. Additional information is contained in AFR 50-5.

(3) Department of the Navy. U.S. Naval Sea Systems Command Detachment, Radiological Affairs Support Office (RASO), Yorktown, VA 23691.

c. Emergency and security personnel shall be trained and equipped to cope with the radiological hazards that may be encountered in the performance of their duties.

4-5. RADIOLOGICAL EMERGENCIES

a. General

(1) The prime objectives of emergency action are the preservation of life and limb and protection of personnel from the radiation hazards. The secondary consideration should be the confinement of the contamination to the local area of the incident. Although no set rules are available to handle every conceivable incident, the proper use of the guidance furnished below will minimize the danger to personnel and property. If there is reason to believe that personnel may have been contaminated or overexposed, such persons shall be moved to an area where any necessary decontamination and medical assistance can be furnished.

(2) Prior plans shall be made in anticipation of radiological emergencies, in order to minimize exposure of personnel and spread of contamination. Such plans shall be written, coordinated, and rehearsed with all support organizations (fire, police, medical, maintenance, repair, damage control, and public information personnel) and transport carriers or ships to which the material is being tendered for transport. Particular procedures in the plan for any supply and maintenance activity shall depend upon the quantity and types of radioactive commodities that are stocked. Such applicable procedures that are adopted shall be written and distributed to support organizations listed above, supervisors, and foremen.

(3) Fire among or near radioactive commodities might produce airborne radioactive hazards. The smoke cloud and areas beneath it should be avoided by personnel, unless they wear complete anticontamination clothing and protective respiratory equipment. This may require evacuation of a sector of the activity, adjacent organizations, and even contiguous civil populations.

(a) Firefighting operations might disperse radioactive materials to areas which initially were not part of the incident site. The draining of liquids from firefighting operations should be properly managed and, when necessary, avoided by personnel, unless impermeable clothing is worn. Additional measures must be taken as necessary to cope with any resultant hazards.

(b) A perimeter cordon or controlled entry shall be formed as soon as possible to prevent access of unauthorized personnel. Size of perimeter cordon or method of controlled entry shall be dependent upon the radiological or other health hazard associated with the radiological emergency. All personnel leaving the area shall be monitored and decontaminated if necessary. No smoking, eating, or drinking shall be permitted within the perimeter.

(4) When personnel are seriously injured all other considerations (except fire, explosion, atmospheres immediately dangerous to life) shall become secondary until urgent first aid is given and help for rescue (if necessary) and evacuation are summoned. Unless there is a high risk to health, no injured or unconscious individual shall be moved until bleeding has been controlled; breathing is normal; the possibility of fractures has been assessed; and necessary splints applied.

(5) As soon as the immediate emergency is under control, a detailed radiological survey shall be conducted of the affected area(s). Provided that the spread of contamination has been halted, priorities can be assigned to decontamination parties working in contaminated areas. Those areas requiring control of

exposure time, shall be controlled by a trained radiological monitor. Assistance from outside source(s) may be required.

b. Emergency Procedures

(1) Emergencies will generally be in the nature of spills, fires, or explosions, by which radioactive materials can be dispersed or released. In case of emergency, the following procedures shall be followed:

(a) In the event of a fire, explosion, spill, or hazardous malfunction, notify all persons to evacuate the area at once.

(b) Notify the fire, police, and medical personnel, if appropriate, indicating involvement of radioactive material.

(c) Shut off heating and air conditioning equipment if airborne contamination is present to prevent the spread of contamination.

(d) Attempt to extinguish fires if radiological hazard is not immediately present.

(e) Notify the Radiation Safety Officer (RSO) and immediate supervisor.

(f) Monitor all persons involved in the emergency or control action.

(g) Following the emergency, monitor the area and determine the protective devices necessary for safe decontamination. The RSO will be available for this determination.

(h) Accidents or incidents involving radioactive material shall be investigated and reported in accordance with applicable Service directives.

(2) The installation commander or his representative shall notify local, county, or state authorities of the emergency as deemed necessary.

4-6. EMERGENCY ASSISTANCE

a. Emergency notifications and requests for assistance will be made in accordance with applicable Service or Agency directives.

b. Assistance beyond local capability in responding to an emergency, in the preparation of emergency plans and standing operating procedures may be requested through command channels from:

(1) For Defense Logistics Agency: HQ DA (DASG-PSP), Washington, D.C. 20310. Commercial 202-697-2796. Autovon 227-2796.

(2) For Department of the Army: HQ USAMC, ATTN: AMCSF-P, Alexandria, VA 22333. Commercial 202-274-9340, Autovon 284-9340.

(3) For Department of the Navy: Naval Sea Systems Command (SEA-644), Washington, D.C. 20362. Autovon 222-1223/1252, Commercial 202-692-1223/1252.

(4) For Department of the Air Force: Air Force Operations Center, HQ USAF/XOOOA, Washington, D.C. 20330. Commercial 202-697-0495, Autovon 227-0495.

4-7. RECOMMENDED RADIOACTIVE CONTAMINATION ACTION LIMITS AND LEVELS. Radioactive contamination action limits and levels will be in accordance with the applicable Service or Agency directives. If further assistance is needed contact the Service or Agency’s Radiological Protection Safety Officer or see paragraph 5-13e.

CHAPTER V

CONTROLS AND SPECIFIC HANDLING OPERATIONS

5-1. GENERAL. This chapter provides preparers of control documents and of standing operating procedures with DoD guidelines applicable to transportation, storage, maintenance, and disposal of radioactive commodities.

5-2. TRANSPORTATION OF RADIOACTIVE MATERIALS

a. Transportation of radioactive materials shall be in accordance with applicable portions of:

(1) Title 10, CFR, Part 71 US NRC Rules and Regulations.

(2) Title 39, CFR, Part 124.3 US Postal Service Regulations for shipment by mail. (Postal regulations and publications on transport of radioactive material are available at your local post office.)

(3) Title 49, CFR, Parts 100-199 Department of Transportation Regulations by rail, highway, air or water.

(4) Title 40, CFR, Parts 122, 124, 263 and 264, Hazardous Waste Management System.

(5) International Air Transport Association (IATA).

(6) DoD 4500.32-R, MILSTAMP, Chapter 4 and Appendix F.

(7) United Parcel Service (UPS) Guide for Shipping Hazardous Materials.

(8) Restricted Articles Tariff 6D.

(9) AFR 71-4/DLAM 4145.3/TM 38-250/NAVSUP PUB 505/MCO P4030.19.

(10) International Maritime Organization Technical Instructions.

(11) International Civil Aviation Organization Technical Instructions.

(12) International Atomic Energy Agency Regulations.

(13) MIL-STD-129.

b. Radioactive commodities may be loaded with other compatible cargo to economize on available equipment space. However, no radioactive materials will be loaded in the same vehicle, compartment or aircraft with shipments of foodstuffs, animals, nor with class A explosives or pyrotechnic materials. Particular care shall be exercised to separate radioactive materials from photographic film and supplies to prevent radiation damage to photosensitive supplies.

c. When an escort is required, those selected to accompany a shipment of radioactive material must be technically qualified and equipped to assure a high degree of safety and security for the shipment.

5-3. SHIPPING ACTIVITY

a. Radioactive commodities shall be consigned only to installations, agencies or individuals that are authorized by an NRC license or Service or Agency authorization to receive them and are known to have a capability for safe handling of the specific commodity. Inventory control point instructions for shipment shall be consistent with this requirement.

b. Shipping documents for radioactive commodities shall meet the requirements of the appropriate documents listed in paragraph 5-2a. Depending upon the individual commodity and the degree of control required, preparation and submission of additional documentation for intransit control purposes might be necessary.

c. Shipping packages containing radioactive material shall be inspected for damage, leakage, and radiation levels before offering to carrier.

d. The consignor is responsible for assuring that all shipments of radioactive commodities are properly packed, packaged, marked, labeled and certified to reduce the potential radiation risk to personnel.

5-4. PACKAGING

a. When it is necessary to repackage radioactive commodities because of loose issue or damage to the original container, the commodity shall be repackaged in accordance with instructions in the directives or regulations cited in paragraph 5-2, or to conform with the original package. The original container shall be opened and repacked carefully, and shall be monitored. Packaging and repacking operations, including radiation monitoring, shall be carried out in a controlled area in the presence of qualified radiation protection personnel.

b. Containers shall be marked, labeled, and certified in accordance with the applicable documents listed in paragraph 5-2.

5-5. RADIOACTIVE SHIPMENTS. References cited in paragraph 5-2 regulate shipment of radioactive commodities by the U.S. Postal Service and Commercial Carrier originating in the United States. The International Atomic Energy Agency and International Civil Air Organization (ICAO), Technical Instructions for the Safe Transport of Dangerous Goods by Air, and International Maritime Organization (IMO) and International Maritime Goods Code are used by foreign governments and overseas air and ocean transport.

5-6. RECEIVING ACTIVITY RESPONSIBILITIES

a. Receiving activities shall establish procedures for the pickup, receipt, monitoring, opening, recording, and reporting radioactive commodity shipments in accordance with Title 10, CFR, section 20.205 and 20.401, or as indicated by Service or Agency directives.

b. As soon as a radioactive commodity is located in an incoming shipment, it shall be monitored with appropriate instruments to determine existence and magnitude of radiation hazards. When the exterior container of radioactive material shows signs of damage or leakage upon removal from the transport vehicle, the vehicle shall be monitored for contamination. A contaminated vehicle should be decontaminated below levels cited in Title 49, CFR, section 173.443. Where contamination is noted, and when more than one carrier is involved in a particular shipment, the receiving activity shall initiate action to inform previous carriers of potential contamination of transport vehicles and the need for possible radiation surveys.

c. Should a container be leaking, it shall be resealed in the presence of qualified radiation protection personnel. When the cause of leakage has been determined, e.g., packaging deficiency or damage in transit, one of the following forms shall be prepared:

(1) Standard Form (SF) 364, Report of Discrepancy (ROD) (DLAR 4140.55/AR 735-11-2/NAVMATINST 4355.73B/AFR 400-54/MCO 4430.3).

(2) SF 361, Discrepancy in Shipment Report (AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19/DLAR 4500.15). Radiological safety assistance may be required in preparing these forms to prevent needless exposure of personnel who investigate the deficiency.

5-7. STORAGE AREAS

a. Open storage, as used in this publication, may also include a shed or covered storage structure with one or more sides fully open. Open storage should only be used when:

(1) The radioactive commodity is a component of an item that is authorized storage under Service or Agency directives or as required by the license or authorization.

(2) The radioactive commodity is a component part of an end item that is designed for outdoor use, e.g., trucks, tanks, and other vehicles. Open storage may necessitate measures to prevent unauthorized entry.

b. Areas used for storage of radioactive commodities shall be kept to the minimum for adequate control.

c. Radioactive commodities shall not be stored in the same warehouse section with explosives, flammable materials, photosensitive items (e.g., photographic film), food products or other incompatible commodities unless provided for and approved by the appropriate Service or Agency.

d. Commodities that contain radioactive gases or radium should be stored in ventilated structures.

5-8. INVENTORY OF COMMODITIES AT SUPPLY FACILITIES AND STOCKING ACTIVITIES

a. The Material Inventory Control Point, in cooperation with supply personnel, shall maintain inventory records identifying distribution of radioactive commodities. These records shall be maintained at each supply and stocking facility. The following information shall be included in the record: transaction date; NSN; Special Item Control Code (SICC); radioisotope(s); chemical and physical form; original activity (e.g., millicuries, microcuries) per item and date determined; storage location; number of items received and transferred; document number of shipment or receipt; balance of items at conclusion of the transaction; and the license or authorization number.

b. Physical inventory count shall be made at least annually to ensure accuracy of inventory records. Containers shall not be opened for this purpose. Any discrepancies noted will be provided to the inventory organization for futher count and adjustment of records, as appropriate.

c. The supply and, where appropriate, the stocking activity shall establish a computer inventory program for radioactive commodities. The program should have the following minimum capabilities:

(1) Printout of all radioactive commodities in storage by NSN, SICC and name, and if available, quantity, radioisotope, activity, location, and status. The Radiological Protection Officer shall be able to obtain this printout upon request, and distribute to emergency support elements as required.

(2) Wherever computerized stock records permit, retention of all radioactive commodities by NSN should be maintained in the computer, for the life cycle of the item in the DoD. Although stock levels are zero, access to specific data is required to process the return and/or ultimate disposal of the item.

(3) Coding to identify unauthorized or obsolete radioactive commodities.

(4) Mechanisms to update or correct any piece of information in the radioactive commodity computer inventory program.

d. Losses of radioactive materials shall be reported in accordance with instructions in control literature for that commodity, and as required by Service or Agency directives.

5-9. CONTROL AND SURVEYS OF STORAGE/WAREHOUSE AREAS

a. Storage locations for commodities containing radioactive materials shall be posted in accordance with the provisions of Title 10, CFR, sections 20.203 and 20.204, or as indicated by Service or Agency directives.

b. Radiation protection surveys shall be made at least annually of storage/warehouse radioactive areas or more frequently as directed by Service or Agency directives to determine:

(1) Location and extent of radioactive contamination and radiation levels, appropriateness of boundaries, signs, markings, and protective equipment and procedures.

(2) Corrective action required to protest personnel and property and to conform with regulations.

c. More frequent surveys could be necessary based on the quantity, type, radiation characteristics, stock activity, warehouse operations, and guidance in the technical literature pertaining to the commodity.

d. Results of surveys shall be reported to operating supervisors with recommendations for corrective actions as necessary. Records of surveys shall be maintained by the Radiological Protection Officer and shall include results, instruments used, name of surveyor, corrective actions taken, and dates.

e. Closeout radiation surveys shall be made and documented for all storage and maintenance locations when operations involving radioactive commodities have terminated.

5-10. CONTROL AND SURVEY OF RADIATION AREAS

a. Work procedures within these areas shall be regulated to minimize radiation exposures.

b. Frequency of surveys shall be based on radioactive commodity inventory, stock activity, radioactive characteristics of the commodity, and guidance in technical literature that pertains to that commodity but shall be done at least annually. The Radiological Protection Officer shall maintain records of each survey. Records shall show radiation levels that existed at the time of survey in each accessible location, instrument used, and name of surveyor and any corrective actions taken.

5-11. MAINTENANCE

a. Only authorized maintenance shall be performed, and maintenance allocation charts shall be available for review.

b. During maintenance, actual contact with the exposed radioactive material may occur. Consequently, maintenance shall be performed only by installations having the necessary authority (NRC license or Service authorization), facilities, trained personnel, radiac and protective equipment, and operating procedures.

c. Prior to completion of the maintenance, radiation markings and safety configurations shall be restored, if applicable.

d. The frequency of radiological surveys shall be determined by the type of use of the work area. Assembly and repair areas shall be surveyed by radiological protection personnel at least quarterly during periods of use.

5-12. SURVEILLANCE. Surveillance procedures and testing shall be conducted as specified in life cycle control literature and appropriate Service or Agency requirements. The Inventory Control Point will assure accomplishment of required surveillance and will report results to the cognizant NRC license or Service or Agency Authorization Manager.

5-13. MARKINGS AND WARNINGS

a. Warning signs designating radioactive material areas, radiation areas and high radiation areas shall be placed at each entrance and other locations surrounding such areas clearly identifying the hazard that exists within the area. Signs, either permanent or temporary, should be securely fixed to the barriers, walls, fences, or ropes. Installations or activities located where non-English languages are prevalent should post signs that include a translation in those languages.

b. Storage locations of radioactive materials and commodities shall be marked in accordance with Title 10, CFR, part 20, or in accordance with Service or Agency directives.

c. Markings shall be in accordance with the provisions of MIL-STD-129, marking of containers to indicate radioactive material, throughout the DoD supply system, although some label modification may be necessary to conform with conditions that are not covered specifically in that publication.

d. In the case where a high radiation area exists for more than 30 days, the area must be equipped with a control device to energize a conspicuous visible or audible alarm in such manner that the person entering and the area supervisor are made aware of the entry, as required by Title 10, CFR, section 20.203.

e. Additional guidance may be obtained from:

(1) For Defense Logistics Agency: HQ DLA (DLA-OW), Alexandria, VA 22304-6100.

(2) For Department of the Army: HQ USAMC, ATTN: AMCSF-P, Alexandria, VA 22333-0001. Also see AR 385-30.

(3) For Department of the Navy: Naval Sea Systems Command, Detachment, Radiological Affairs Support Office (RASO), Yorktown, VA 23691.

(4) For Department of the Air Force: HQ AFMSC/SGPA, Brooks AFB, TX 78235.

5-14. CALIBRATION OF RADIAC SURVEY METERS. Radiac survey meters (health and safety survey meters) shall be calibrated at intervals established in Service or Agency directives.

5-15. DISPOSAL

a. General. Services and Agencies will determine which commodities and spare parts are radioactive. They will not report radioactive commodities to Defense Property Disposal Offices (DPDOs) unless the commodity has been determined to be safe for military and public use. Radioactive commodities must be screened in accordance with Federal Property Management Regulations (FPMR 101-14.1 and FPMR C-24) prior to being reported to the DPDO. If the commodity is controlled by an NCR or Agreement State license, the Disposal Release Order will state that transfer, sale, or donation is limited to licensed recipients. The Services and Agencies will assure that radioactive commodities to be sold, donated, or transferred are marked in accordance with MIL-STD-129 and free of contamination in excess of limits specified in Service or Agency directives. Radioactive commodities will not be physically moved to the DPDO but will be retained until shipping instructions

are received from the DPDO (DoD 4160.21-M, chapter IV, paragraph D, and chapter VI, paragraphs B33, B87, and B90).

b. Radioactive Waste Products

(1) Items which cannot be decontaminated or repaired and leaking items shall be disposed of by the Service or Agency as radioactive waste.

(2) Excess or surplus items containing radioactive material shall be disposed of as radioactive waste when licenses or Service authorizations require, or when the Inventory Control Point or owning activity determines that any other method of disposal is not in the best interest of the Government.

(3) All radioactive waste shall be disposed of in accordance with Service or Agency directives, Title 10, CFR, part 20, and burial site criteria if applicable.

c. Serviceable License Exempt Items Containing Radioactive Material.

(1) License exempt materials incorporated in major serviceable end items of equipment shall be disposed of by the DPDO in accordance with normal utilization, transfer, donation, or sales procedures. License exempt material shall be removed from unserviceable major end items by the Service or Agency and disposed of in accordance with Service or Agency directives.

(2) Unless indicated by Service or Agency directives, license exempt items not incorporated into major end items or equipment shall not be subjected to normal utilization screening procedures in accordance with DoD 4160.21-M, chapter VI, paragraph B33. These items shall not be physically moved to a DPDO nor will they be made available for donation or reported for sale. Items not utilized by other DoD components or transferred to Federal agencies will be disposed of as radioactive waste by the Service or Agency in accordance with applicable Service or Agency instructions.

(3) Microwave receiver protector tubes, marine navigation devices containing tritium gas, and any commodity containing radium sources may only be utilized within DoD or disposed of as radioactive waste in accordance with applicable Service or Agency instructions. Screening for utilization within DoD will be accomplished by the owning Service or Agency. These items shall neither be physically moved to a DPDO nor will they be accepted on the accountable records of a property disposal activity. These items are not authorized for donation or sale.

d. Serviceable Licensed Items Containing Radioactive Materials. These items shall be transferred, donated, or sold only to persons having a proper license to possess them. Only the item manager or owning activity will screen these items for utilization, transfer, and donation. Sales assistance shall be provided by DPDO as required. If the items cannot be utilized, transferred, donated, or sold, they will be disposed of by the Service or Agency as radioactive waste in accordance with Service or Agency directives, and Title 10, CFR, part 20. These items will neither be physically moved to a DPDO nor will they be accepted on the accountable records of a DPDO.